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Climatization: A critical perspective of framing disasters as climate change events

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ABSTRACT

In recent years, there has been a developing trend of labelling some disasters as '*climate change disasters*'. In doing so, a discursive phenomenon can emerge that the authors have coined '*climatization*' which is specified as *framing a disastrous event or degraded environmental condition as caused by climate change, in order to reach an intended goal or to distract the discussion from the real problem which might have a different root course than caused by the climate change effects*.

The implications of climatization are currently unclear – particularly to what extent climatizing a disaster might increase or decrease the vulnerability of a population at risk of disaster. The purpose of this paper is thus to open up the concept of climatization to investigation, and examine what affect such a discursive framing might have on public and political perception.

Climatization is here discussed in the context of Bangladesh – a country that is expected to be among the worst affected by climate change and a country in which some people claim the effects of climate change can already be seen. A qualitative field study which included key informant interviews, focus group discussions and a literature review was conducted in Bangladesh.

The study found recent examples of climatization related to Cyclone Aila (2009) and salt water intrusion in Bangladesh. In most cases these disasters were climatized in order to create a sense of urgency in order to push for an increase in financial aid to Bangladesh and to deflect responsibility for inaction that led up to the disaster. This study urges caution as there is a potential for climatization to be used as a means to cover up negligence or bad management and there is a risk that by climatizing a disaster key vulnerabilities may be overlooked.

Introduction

Each year, millions of people are affected by natural disasters worldwide (EM-DAT, 2014). In this paper the term disaster is used to refer to both sudden onset and slow onset disasters which have resulted from naturally occurring hazards. A hazard (such as a cyclone, earthquake or drought) is of course not itself a disaster; rather a hazard only becomes a disaster when it causes "a serious disruption to the functioning of a community or a society involving widespread human, material,

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economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources" (UNISDR, 2009). There are several factors that play a role in determining if a specific hazard becomes a disaster, including the scale and intensity of the hazard, the specific vulnerabilities of the affected population in relation to the hazard, and the specific capacities of the affected population in relation to the hazard (Wisner et al., 2008).

As the climate changes, it is projected that the frequency and intensity of natural hazards is also expected to change in various ways (IPCC, 2014). Hazard-prone countries are projected to face more extreme versions of pre-existing hazards: for example, due to warmer sea surface temperatures, more cyclones are expected to reach category 4 and 5; as well as encounter new hazards such as the loss of coastal land due to sea level rise. Furthermore, environmental conditions such as saltwater intrusion – the movement of sea water into fresh water sources – are also expected to be exasperated by climate change (IPCC, 2014; MoEF, 2009).

In recent years there has been a developing trend of labelling current disasters as '*climate change disasters*' – meaning a disaster that is caused or directly intensified by climate change (Alam et al., 2011; Schwartz, 2012; UNEP, 2013). In many cases this has led to calls for action to be taken based on the assumption that specific current disasters are in fact attributed to climate change (Bojanowski, 2012; Vidal, 2012; Wrigley, 2012).

Meanwhile, the term 'climate change' is becoming increasingly politicized and is frequently a topic of debate among world leaders. In the context of the growing climate change discourse, the 'climate change disaster' could potentially create an opportunity for the *securitization* of climate change. When a specific issue is *securitized*, it is "presented as an existential threat, requiring emergency measures and justifying actions outside the normal bounds of political procedure" (Buzan et al., 1998; Waever, 2008, 2011). However, there is also the potential to frame a specific disaster as a 'climate change disaster' in order to justify inaction; for example, a disaster that was caused by lack of management or poor governance could potentially be framed as being caused by climate change in order to deflect responsibility and accountability.

The concept of 'climatization' has been coined by the authors to accommodate a discursive phenomenon, which is specified as framing a disastrous event or degraded environmental condition as caused by climate change, in order to reach an intended goal or to distract the discussion from the real problem which might have a different root course than caused by the climate change effects. The authors posit that these intended goals may include, but are not limited to, acquiring funding or resources and/or diverting blame. The implications of climatization are at this point unclear – particularly to what extent climatizing a disaster might increase or decrease the vulnerability of a population at risk of disaster.

This paper aims to explore the phenomenon surrounding the discourse of the 'climate change disaster' and the new concept of 'climatization' in the context of Bangladesh – a country that is expected to be among the worst affected by climate change (MoEF, 2009); and some say, a country where the effects of climate change can already be seen – specifically in relation to recent Cyclones Sidr (2007) and Aila (2009), as well as the current state of saltwater intrusion in coastal regions of the country (Alam et al., 2011; Vidal, 2012). By discussing the differences in public, private and organizational discourse, as well as contrasting these with the findings of the Intergovernmental Panel on Climate Change (IPCC), this study hopes to allow for a more critical and nuanced attitude towards labelling events as 'climate change disasters'.

Methods

This study was conducted as part of a two year field study in Bangladesh (January 2011–December 2012) and is based on qualitative data collection (semi-structured key informant interviews and focus group discussions) and a literature review.

The coastal sub-district of Shyamnagar, Satkhira, located in the south-western part of Bangladesh, was chosen as the study area for this research (Fig. 1). In 2007, the area was hit hard by Cyclone Sidr and was then devastated by Cyclone Aila in 2009. Saltwater intrusion is also a growing problem in this area.

Cyclones and salt water intrusion were chosen as a focus based on initial key informant interviews that were conducted to determine which natural disaster(s) will likely have or are currently having the greatest impact from climate change. While many suggestions were given, these were the two most cited.

A total of 62 key informants were interviewed in order to discuss recent disasters in Bangladesh and the present and future impact of climate change in the country. The interviews were semi-structured in nature and allowed for follow-up questions. Interviews were arranged with the assistance of a trained, Bangladeshi research assistant and the interviews were conducted by the main author with the assistance of a translator. The key informants were leaders in their districts, communities, or organizations that had first-hand knowledge on local communities and their corresponding risks and hazards within Bangladesh. Key informants were selected from various sectors including government officials in Dhaka and Satkhira (which included higher level officials in Dhaka, district level officials in Satkhira and local leaders at the community level within the study area), as well as respondents from the United Nations (UN) (in Dhaka), national and international non-government organizations (NGO) and research institutions working in Bangladesh (in Dhaka and in Shyamnagar, Satkhira).

A total of 20 focus group discussions were held with community members in Shyamnagar as well as migrant workers in Dhaka who had come from coastal areas. Focus groups were conducted by the main author and facilitated by a trained, Bangladeshi data collector that had previous experience working in both communities. Separate focus groups were held among men and women, and the respondents consisted of farmers, fishermen, housewives, shop owners and day labourers.

Data was also gathered through a literature review of IPCC findings, followed by a review of literature of climate change and disasters in Bangladesh. Scientific literature was searched using the keywords *climate change*, *disasters*, *cyclones*,

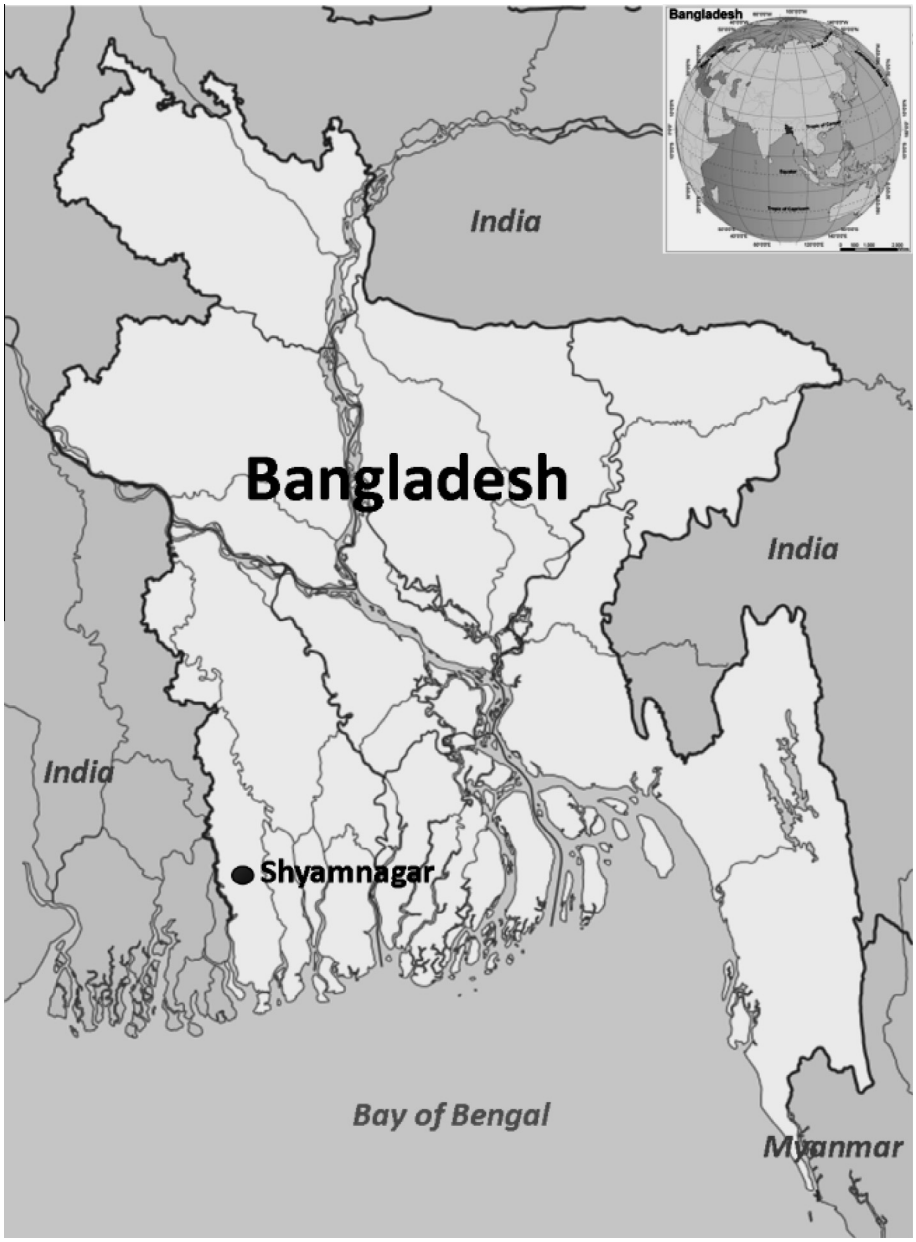

Fig. 1. Study area: Shyamnagar, Satkhira.

saltwater intrusion, Bangladesh and *securitization of climate change* in the *PubMed* and *ISI Web of Knowledge* databases. Specific searches for *Cyclone Sidr, Cyclone Alia* and *saltwater intrusion in Bangladesh* were also done. Grey literature, including UN, NGO and news reports were gathered through a Google search, using the same keywords.

The study used a qualitative framework analysis. Literature and collected data were grouped into four areas: peer-reviewed literature; official government reports, strategies and policies; grey literature including NGO reports; and verbal narrative, which includes data gathered from key informant interviews and focus group discussions held in Bangladesh.

Results

Cyclone Sidr and Cyclone Aila

Historical context of cyclones in Bangladesh

Situated on the northern end of the Bay of Bengal, Bangladesh is often hit by severe cyclones (MoEF, 2009). These cyclones can sometimes reach wind speeds of 200–250 km/h. Storm surges which accompany the cyclones tend to be

particularly high in Bangladesh as the Bay of Bengal acts like a funnel, driving storm surges high over a shallow continental shelf (MoEF, 2009).

Cyclones in Bangladesh have taken a large toll on human life in the past century. Tropical cyclones that hit Bangladesh in 1970 and 1991 had estimated death tolls of 300,000 and 140,000 respectively (EM-DAT, 2014). Yet in 2007, Cyclone Sidr, which was relatively similar in strength to the 1970 and 1991 cyclones, only had an estimated death toll of 4000 (EM-DAT, 2014). This dramatic reduction in lives lost has been credited to early warning systems, the introduction of cyclone shelters and embankments, as well as other national and community based disaster preparedness measures (Grant, 2009). In 2009, Cyclone Aila devastated the south-western coast of Bangladesh. With wind speeds of 110–120 km/h, Cyclone Aila was much smaller than Cyclone Sidr, or the 1970 and 1991 cyclones; however it still had a huge impact on the affected area in terms of economic loss and disruption of livelihoods. Cyclone Aila made landfall during the highest tides of the month and breached embankments along coastal communities causing widespread flooding and saltwater intrusion (Grant, 2009).

Discourse surrounding climate change and Cyclone Sidr and Cyclone Aila

The data search did not uncover any official written sources from the Bangladesh Government that name specific cyclones in Bangladesh as being caused by climate change. The Bangladesh National Strategy on Climate Change and most UN reports (including IPCC reports) that were found, tended to point to future climate change scenarios, rather than to specific cyclones, as being caused by climate change (IPCC, 2012; MoEF, 2009). Many of these reports use current cyclones like Cyclone Sidr and Cyclone Aila as examples of what future events might look like, but stop short of claiming that either Cyclone Sidr or Cyclone Aila were directly caused or intensified by climate change. The IPCC states that the evidence supporting climate change is unequivocal (IPCC, 2014). According to the IPCC however, there is currently "low confidence in any observed long-term (i.e., 40 years or more) increases in tropical cyclone activity (i.e., intensity, frequency, duration), after accounting for past changes in observing capabilities" (IPCC, 2012).

News reports tended to be more inclined to link given disasters in Bangladesh with climate change. A strong example of this can be seen in an online article from 2012 in *The Guardian* headlines "'We have seen the enemy': Bangladesh's war against climate change." Referring to Cyclones Sidr and Aila, the article states that "storms of this intensity historically happen in Bangladesh once every 20–30 years. But two "super-cyclones" in two years [. . .] convinced Sultan [a local community member] and her village, as well as many sceptics in government, that climate change was happening and Bangladesh's very survival was at stake" (Vidal, 2012).

The article continues with Bangladeshi foreign minister, Dipu Moni, stating that "rich countries had not given the money they had pledged to help Bangladesh and other vulnerable countries adapt. 'Climate change is real and happening . . . but we do not see the money coming'" (Vidal, 2012). Finally, the article concludes by a senior member of Dipu Moni's office arguing that international funding for climate change adaptation in Bangladesh should be given in addition to the ongoing development funding. "'But [countries] have refused to [say] if the climate change money is taken out of [the existing] aid basket,' said a senior civil servant. 'We want clear guarantees that this money will be on top of official development assistance money. DFID [British Department for International Development] has not clarified this is additional to ODA [Official Development Assistance]'" (Vidal, 2012).

During interviews with government officials in Dhaka, NGO representatives and researchers from research institutes in Bangladesh, several key informants from each of these key informant groups stated that Cyclone Sidr and/or Cyclone Aila were a direct result of climate change. These informants argued that Sidr was stronger than it would have otherwise been due to the influences behind climate change – citing a rise in sea surface temperature (which allows more energy to be transferred from the ocean and thereby increasing the intensity of the storm) and sea level rise as contributing factors to making the storm more intense than it would have been otherwise. Other key informants stated that the excess damage that Aila caused – as compared to other cyclones of that intensity – was a result of climate change.

However, the government disaster management official in one of the areas most affected by Cyclone Aila believed that the devastation caused by Aila was not related to climate change at all but was instead due to weakened embankments and to an increased population in a very hazard-prone area.

The dominate theme within focus group discussions in areas affected by Cyclone Aila also linked the devastation of the storm with weakened embankments (brought up in every focus group discussion by at least one respondent). According to these community members, the embankments had been weakened by farmers making improvised bore holes through the embankments to allow water to flow through for irrigation purposes and for drainage of water from inside the embankment area. In four of these focus groups, community members also reported that the sluice gates that were designed to allow water to drain into rivers were unable to close properly or were deliberately left open during the cyclone to allow saltwater to flow inland in order to benefit the shrimp/prawn farms.

Saltwater intrusion in Bangladesh

Historical context of saltwater intrusion in Bangladesh

In the past few decades there has been an increase in saltwater intrusion in coastal regions of Bangladesh (Alam et al., 2011; Rahman and Bhattacharya, 2006). This environmental problem has resulted in a negative effect on agriculture, forestry, industry and drinking water in that area; in some cases the problem is to such an extent as to constitute a disaster for the affected population (Mirza, 1998; Wolf, 2001). Some of the most publicized reasons for saltwater intrusion in

Bangladesh are the damming of major rivers leading into Bangladesh, the pumping of surface or shallow saline water sources for agricultural use (such as inland saltwater shrimp/prawn farming), and climate change.

Several scholars turn to trans-boundary water governance as reasons for increased salinity in coastal Bangladesh. In 1975, the Indian Government completed work on the Farakka Barrage. This dam on the Ganga River is used to generate hydro-electric power, as well as to divert water to areas in India that would otherwise flow into Bangladesh. For years, studies have shown that the diversion of water from the Farakka Barrage has significantly reduced the dry season discharge of the Ganges and Gorai Rivers in Bangladesh (Mirza, 1998). This reduction in dry season discharge has led to accelerated sedimentation and increased salinity in the southwest regions of Bangladesh (Mirza, 1998; Wolf, 2001). India currently has plans to dam the other major rivers flowing into Bangladesh.

Meanwhile, other scholars point to the practices of inland saltwater shrimp farming as the cause of saltwater intrusion. The shrimp/prawn farming industry has experienced a boom in industry since the 1970's in coastal Bangladesh (in this paper shrimp and prawn are used interchangeably). The current practices of shrimp farming involve pumping saline water from either ground water sources or from brackish rivers into inland areas surrounded by embankments. Studies have shown that shrimp farms increase salinity in the soil and ground water in the surrounding area (Ali, 2006; Chowdhury et al., 2011).

Furthermore, a labyrinth of embankments, causing poor drainage, means there is less opportunity for saline water introduced into this system to be drained away through annual flooding or rainfall. This, as well as other land use practices in the coastal region has been referred to as a "man-made disaster" (Ahmed, 2011).

Discourse surrounding climate change and saltwater intrusion in Bangladesh

Most official government literature regarding saltwater intrusion and climate change in Bangladesh discusses possible future conditions based on different climate scenarios, rather than attributing the current conditions to climate change (IPCC, 2012; MoEF, 2009). For example, the IPCC projects that sea level rise will likely cause further pressure on saltwater intrusion in areas that are already experiencing it, such as Bangladesh (IPCC, 2012).

Some studies however point directly to climate change as causing the current saltwater intrusion in Bangladesh, citing sea level rise or changing patterns of rainfall as the driving force behind the saltwater intrusion (Alam et al., 2011; Bhuiyan, 2012). Yet these studies often lack a discussion on other factors that might contribute to the saline intrusion, such as the above mentioned diversion of major rivers and the practice of inland saltwater shrimp farming in coastal Bangladesh.

Other reports, such as NGO reports, online articles and news reports often depict the conditions in Bangladesh as a war zone, such as "Bangladesh's Battle with climate change" (Heffernan, 2009) and attribute the current conditions, including saltwater intrusion, to climate change. Most of these reports and articles also push for climate change adaptation funding and for cutting greenhouse gas emission (Inman, 2009).

Among key informants from government offices, NGOs and research institutions, two distinct themes emerged. The more dominate theme suggested that a combination of the diversion of major rivers, shrimp farming practices and climate change were all contributing factors in an overall increase in the population's vulnerability to saltwater intrusion in Bangladesh. Meanwhile, a lesser dominant theme also emerged which focused almost exclusively on climate change as the cause of saltwater intrusion in Bangladesh, citing sea level rise and changing patterns of rainfall.

One government official from Dhaka stated that "we did not cause the problem [of climate change]; therefore it is not our responsibility [to address issues related to climate change mitigation and adaptation]." The official continued by saying that events such as Cyclone Sidr and conditions including saltwater intrusion are a direct result of climate change and added that "Western countries alone," as the emitters of greenhouse gases, are responsible to mitigate climate change as well as address current issues of climate change adaptation in Bangladesh.

During focus group discussions with community members in the coastal areas, the dominant themes related to saltwater intrusion suggested that shrimp farms posed the most immediate threat to the environmental conditions in the community. Reoccurring arguments within this theme (brought up by respondents in 14 focus groups) suggested that farmers were no longer able to grow rice in fields adjacent to shrimp farms due to the increased salinity. Along this same theme, respondents in four of these 14 focus groups also reported that ponds, which in the past were used for drinking purposes, became too salty to drink from when a nearby paddy field was converted to a shrimp farm. Finally, a third theme emerged in which respondents attributed the storm surge from Cyclone Aila (which penetrated the embankments) and other previous storm surges to being the driving force for the saltwater intrusion in their area. Each of the focus groups (six in total) in which this theme was brought up by respondents, were all located adjacent to an embankment which had breached during Cyclone Aila. The other 14 focus groups in which shrimp farming was brought up by respondents in relation to saltwater intrusion were all located away from the embankments and were in areas that had a mix of rice paddies and shrimp farming agriculture.

Discussion

The results in this study underscore the complexity in determining causality of a specific disaster, particularly in the context of climate change, which are supported by climate change and disaster literature. Cannon and Muller-Mahn (2010) argue that "it is pointless (or even irresponsible) to consider the risks resulting from climate change in isolation from the others that people in the developing world have to encounter" (Cannon and Muller-Mahn, 2010). Meanwhile, Gaillard

et al. (2005) posit that an increase in the number of disasters in the Philippines during the 20th century is not natural in origin but rather results from an increase in people's vulnerability in a changing society, which is linked to population dynamics, fast urbanization and economic development (Gaillard et al., 2005). Gaillard points to a complex interaction between the historical and cultural heritages, the political-economic system and a difficulty in accessing land and resources as rendering the population vulnerable to natural hazards (Gaillard et al., 2005). Therefore, in order to effectively reduce the risk of current and future disasters, it is important to distinguish what aspects of a given disaster are attributable to climate change and what aspects are attributable to other factors leading to vulnerability; such as environment, economic, social or political factors. Incorrectly attributing the cause of a specific disaster, whether it is a direct cause or an underlying cause, may ultimately increase the vulnerability of the population at risk by taking away focus from the issues that are truly causing the vulnerability.

In the context of the disaster and climate change discourse in Bangladesh, within the written narrative there seems to be clear differences between what is written based on the type of literature. When considering cyclones and saltwater intrusion in Bangladesh, peer-reviewed literature, including the IPCC reports, tend to warn of future disasters being impacted by climate change and speak of current hazards in general as becoming increasingly frequent and more intense. This is supported in the broader climate change narrative by Cannon and Muller-Mahn (2010) who state that, "although it is inappropriate scientifically to attribute any single extreme event to global warming, there is scientific consensus that climate-related hazards are becoming increasingly frequent and more intense" (Cannon and Muller-Mahn, 2010). Grey literature on the other hand, tends to point to both future and present disasters in Bangladesh as being directly impacted or even caused by climate change. Meanwhile, the verbal discourse surrounding cyclones and saltwater intrusion in Bangladesh tends to vary from one respondent to another – particularly in key informant interviews, where respondents seemed to speak their individual professional views about climate change issues rather than simply reiterating official written statements.

Examples of climatization found in this study focused on ensuring international financial aid and deflecting responsibility for improper action or inaction. For example, *The Guardian* article quoted the Bangladeshi foreign minister at the time, Dipu, Moni as saying Cyclone Sidr and Cyclone Aila were caused by climate change and that the money pledged by rich countries was not coming (Vidal, 2012). This framing attributes blame to "rich countries" and creates a sense of urgency in order to push for an increase in financial aid to Bangladesh and other developing countries. Meanwhile, the article also deflects the responsibility for the extent of the disaster away from local governance.

Indeed, Cyclone Aila caused widespread damage, however the storm itself was much smaller than Cyclone Sidr and is not comparable in strength to the 1970 or 1991 cyclones that devastated Bangladesh in the past. Yet at the same time, the damage caused by Cyclone Aila was greater than other cyclones of similar strength which have hit Bangladesh in recent years. While it is possible that climate change had at least some influence on Cyclone Aila, due to a lack of data, it is difficult to determine to what extent climate change led to an increase in damage caused by this specific disaster. Instead the damage that occurred during Cyclone Aila seems to be more related to vulnerabilities that are not influenced by climate change, such as overpopulation in a hazard-prone area and poor embankment and sluice gate management.

Despite the challenges in measuring the specific impact of climate change on disasters, the potential impact of climate change on disasters is of such great severity that the risk should not be ignored. Furthermore, in most cases, the risk that climate change poses is related to existing hazards. Therefore it could be argued that if the climatization of Cyclone Aila is successful and leads to an increase in climate change adaptation funding for Bangladesh, then this may in fact decrease a population's vulnerability to disasters, regardless of the extent to which the specific disaster can be linked to climate change or not.

On the other hand, there is a potential for climatization to be used as a means to cover up negligence or bad management. By climatizing Cyclone Aila, there is a risk that factors which increase vulnerability, such as poor embankment and sluice gate management, may be overlooked. This could be done with the explicit or unspoken goal to cover up mistakes or potentially as an unintended result of climatizing the disaster with a completely separate goal in mind. In this study, the Bangladeshi government official in Dhaka that was interviewed, suggested that it is the "richer western countries" that are responsible for climate change and who should also be accountable for damages from a disaster that can be labelled as one caused by climate change. By doing this, the government official may attempt to deflect the responsibility of his government's inaction to address issues related to water resource management.

Climatization is also a concern when considering the issue of saltwater intrusion. By climatizing saltwater intrusion in coastal Bangladesh, other serious issues such as national and trans-boundary water governance, as well as issues related to shrimp farming could possibly be swept aside in the process. In several Asian countries, including Bangladesh, the increasing destruction of mangrove areas in order to accommodate shrimp farming has put these areas at risk to environmental degradation and leaves them more susceptible to storm surges (Paez-Osuna, 2001). It is imperative, therefore, to gain a deeper understanding of how activities such as deforestation in relation to climate phenomena contribute to damage from storms, cyclones and salt-water intrusion in order to take steps to mitigate the effects of these hazards.

Interestingly, at the community level in the cyclone affected areas, there was a greater emphasis on vulnerability and capacity, than to whether Sidr, Aila and saltwater intrusion were caused by the changing climate. This study did not find the 'helpless victims of climate change and natural disasters' that many reports and studies discursively situate these communities in. Instead, the study found a resilient population. While these communities may lack resources to fully deal with disasters, they nonetheless seem to have a good understanding of which disaster-related risks they face, how they are vulnerable to those risks and what capacities they should further develop to reduce their risk of disasters. This was particularly

evident in the focus group discussions where there were clear differences in the discussions related to saltwater intrusion depending on the immediate surroundings of where the focus group was held – focus groups held in close proximity to embankments discussed the threat of storm surge while focus groups held in areas of mixed agricultural land use discussed threats related to shrimp farming). Whether saltwater intrusion or Cyclone Sidr and Cyclone Aila are considered 'climate change disasters', seems to matter less to respondents in these communities compared to whether they are prepared or not to face the next inevitable storm, regardless of cause.

Thus, it appears that the climatization that occurs in Bangladesh is occurring more at the macro level rather than the micro level – often citing micro level events to achieve macro level goals. While some goals, like advocating for greater climate change adaptation and mitigation efforts, might generally be seen as a good thing, there is also the potential for negative effects and opportunity costs involved in climatizing a specific disastrous event or environmental condition. Whether the means justifies the ends is up for debate.

Conclusion

The purpose of this paper is to highlight a developing trend of attributing causality of specific disasters to climate change and to critically examine the implications of doing so. The authors do not negate that climate change may have already increased the frequency or magnitude of disaster in Bangladesh or the need for climate change mitigation and planning in Bangladesh. They also do not discourage the use of foreign or local funds in projects to lessen the anticipated effects of climate change. However, by attributing causality of specific disasters to climate change without question, there is a risk that potentially more pressing concerns of vulnerability, capacity and governance might be overlooked. This study unearthed a growing discursive trend which urges caution and points to a need for further research into the climatization of disasters and its implications worldwide.

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Helene von Ahnen Haugaard, University of Copenhagen, edited the manuscript throughout.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.crm.2015.09.003. These data include Google maps of the most important areas described in this article.

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